

## DRAFT ATTACHMENT F

## ACTIVE TREATMENT SYSTEM REQUIREMENTS

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
GENERAL PERMIT FOR STORMWATER DISCHARGES  
ASSOCIATED WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES

**Table 1 – Numeric Effluent Limitations, Test Methods, Detection Limits, and Reporting Units**

Parameter	Test Method	Discharge Type	Method Detection Limit	Units	Numeric Effluent Limitation
pH	Field test with calibrated portable instrument	For ATS Discharges	0.2	pH Units	Lower NEL = 6.0 Upper NEL = 9.0
Turbidity	EPA 0180.1 and/or field test with a calibrated portable instrument	For ATS discharges	1	NTU <sup>1</sup>	10 NTU for Daily Flow-Weighted Average & 20 NTU for Any Single Sample

- A.** The discharger choosing to implement an active treatment system (ATS) on their site shall comply with all the requirements in this Attachment F.
- B.** The discharger shall maintain a paper or electronic copy of each ATS specification on-site in compliance with the record retention requirements in Section IV Special Provisions of this General Permit.
- C. ATS Design, Operation, and Submittals**
- The ATS shall be designed and approved by a Certified Professional in Erosion and Sediment Control (CPESC), a Certified Professional in Storm Water Quality (CPSWQ), or a California licensed professional civil engineer.
  - The discharger shall ensure that the ATS is designed in a manner to preclude the accidental discharge of settled floc<sup>2</sup> during flocculation pumping or related operations.

<sup>1</sup> Nephelometric Turbidity Unit

<sup>2</sup> Floc is defined as a clump of solids formed by a chemical action.

3. The discharger shall design outlets to dissipate energy from concentrated flows.
4. The discharger shall install and operate an ATS by assigning a lead person (or project manager) who has either a minimum of five years construction stormwater experience or who is a licensed contractor specifically holding a California Class A Contractors license.<sup>3</sup>
5. The discharger shall prepare an ATS Plan that combines the site-specific data and treatment system information required to safely and efficiently operate an ATS. The ATS Plan shall be electronically certified and submitted through SMARTS at least 14 days prior to the planned operation of the ATS and a paper copy shall be available on-site during ATS operation. At a minimum, the ATS Plan shall include:
  - a. ATS Operation and Maintenance Manual for All Equipment;
  - b. ATS Monitoring, Sampling & Reporting Plan, including Quality Assurance/Quality Control (QA/QC);
  - c. ATS Health and Safety Plan;
  - d. ATS Spill Prevention Plan; and,
  - e. The ATS shall be designed to capture and treat (within a 72-hour period) a volume equivalent to the runoff from a 10-year, 24-hour precipitation event using a watershed runoff coefficient of 1.0.

#### **D. Treatment – Chemical Coagulation and Flocculation**

1. The discharger shall conduct jar tests using water samples selected to represent typical site conditions and in accordance with ASTM D2035-08 (2003).
2. The discharger shall conduct, at minimum, six site-specific jar tests (per polymer with one test serving as a control) for each project to determine the proper polymer and dosage levels for their ATS.
3. Single field jar tests may also be conducted during a project if conditions warrant; for example, if construction activities disturb changing types of soils, which consequently cause change in stormwater and runoff characteristics.

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<sup>3</sup> [Business and Professions Code Division 3, Chapter 9, Article 4](http://www.cslb.ca.gov/About_Us/Library/Licensing_Classifications/A_-_General_Engineering_Contractor.aspx), Class A Contractor: A general engineering contractor is a contractor whose principal contracting business is in connection with fixed works requiring specialized engineering knowledge and skill. Web. <[http://www.cslb.ca.gov/About\\_Us/Library/Licensing\\_Classifications/A\\_-\\_General\\_Engineering\\_Contractor.aspx](http://www.cslb.ca.gov/About_Us/Library/Licensing_Classifications/A_-_General_Engineering_Contractor.aspx)>. [as of October 19, 2020].

## E. Residual Chemical and Toxicity Requirements

1. The discharger shall utilize a residual chemical test method that has a method detection limit (MDL) of 10 percent or less than the maximum allowable threshold concentration<sup>4</sup> (MATC) for the specific coagulant in use and for the most sensitive species of the chemical used.
2. The discharger shall utilize a residual chemical test method that produces a result within one hour of sampling.
3. The discharger shall have a State Water Board Environmental Laboratory Accreditation Program (ELAP) certified laboratory validate the selected residual chemical test. Specifically, the laboratory will review the test protocol, test parameters, and the detection limit of the coagulant or flocculant. The discharger shall electronically certify and submit this documentation as part of the ATS Plan through SMARTS.
4. The discharger shall operate the ATS in Batch Treatment<sup>5</sup> mode if the discharger cannot utilize a residual chemical test method that meets the above requirements.
5. The discharger shall not cause physical impacts on receiving waters through the use of ATS batch storage and treatment, including but not limited to, inadequate storage volume; sudden releases of the batches; improperly designed discharge points.
6. A discharger planning to operate in Batch Treatment mode shall perform toxicity testing in accordance with the following:
  - a. Initiate acute toxicity testing on effluent samples representing effluent from each batch prior to discharge<sup>6</sup>. All bioassays shall be sent to a laboratory certified by the Environmental Laboratory Accreditation Program. The

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<sup>4</sup> The Maximum Allowable Threshold Concentration (MATC) is the allowable concentration of residual, or dissolved, coagulant/flocculant in effluent. The MATC shall be coagulant/flocculant-specific, and based on toxicity testing conducted by an independent, third-party laboratory. A typical MATC would be:  
The MATC is equal to the geometric mean of the NOEC (No Observed Effect Concentration) and LOEC (Lowest Observed Effect Concentration) Acute and Chronic toxicity results for most sensitive species determined for the specific coagulant. The most sensitive species test shall be used to determine the MATC.

<sup>5</sup> Batch Treatment mode is defined as holding or recirculating the treated water in a holding basin or tank(s) until treatment is complete or the basin or storage tank(s) is full.

<sup>6</sup> This requirement only requires that the test be initiated prior to discharge.

required Field of Testing (FOT) for Whole Effluent Toxicity (WET) testing is E113.<sup>7</sup>

- b. Acute toxicity tests shall be conducted with the following species and protocols. The methods to be used in the acute toxicity testing shall be those outlined for a 96-hour acute test in “Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms, U.S. EPA-821-R-02-012” for Fathead minnow, *Pimephales promelas* (fathead minnow). Acute toxicity for *Oncorhynchus mykiss* (Rainbow Trout) may be used as a substitute for testing fathead minnows.
- c. All toxicity tests shall meet quality assurance criteria and test acceptability criteria in the most recent versions of the U.S. EPA test method for WET testing<sup>8</sup> as well any toxicity provisions adopted by the State Water Board.
- d. The discharger shall electronically certify and submit all acute toxicity testing through SMARTS within 10 days from receiving the results from the laboratory.

#### **F. Filtration**

1. The ATS shall include a filtration step between the coagulant treatment train and the effluent discharge. This is commonly provided by sand, bag, or cartridge filters, which are sized to capture suspended material that might pass through the clarifier tanks.
2. Differential pressure measurements shall be taken to monitor filter loading and confirm that the final filter stage is functioning properly.

#### **G. Residuals Management**

1. Sediment shall be removed from the storage or treatment cells as necessary to ensure that the cells maintain their required water storage (i.e., volume) capability.
2. Handling and disposal of all solids generated during ATS operations shall be done in accordance with all local, state, and federal laws and regulations.

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<sup>7</sup> Information on [ELAP's](https://www.waterboards.ca.gov/drinking_water/certlic/labs/) <[https://www.waterboards.ca.gov/drinking\\_water/certlic/labs/](https://www.waterboards.ca.gov/drinking_water/certlic/labs/)>; [ELAP Application and FOT Forms](https://www.waterboards.ca.gov/drinking_water/certlic/labs/fot_forms.html): <[https://www.waterboards.ca.gov/drinking\\_water/certlic/labs/fot\\_forms.html](https://www.waterboards.ca.gov/drinking_water/certlic/labs/fot_forms.html)>. [as of October 19, 2020].

<sup>8</sup> [U.S. EPA. Whole Effluent Toxicity \(WET\)](https://www.epa.gov/npdes/whole-effluent-toxicity-wet). Web. <<https://www.epa.gov/npdes/whole-effluent-toxicity-wet>>. [as of October 19, 2020].

## H. ATS Instrumentation

1. The ATS shall be equipped with instrumentation that automatically measures and records effluent water quality data and flow rate.
2. The minimum data recorded shall be consistent with the Monitoring and Reporting requirements below, and shall include:
  - a. Influent Turbidity;
  - b. Effluent Turbidity;
  - c. Influent pH;
  - d. Effluent pH;
  - e. Residual Chemical;
  - f. Effluent Flow rate; and,
  - g. Effluent Flow volume.
3. Systems shall be equipped with a data recording system, such as data loggers or webserver-based systems, which records each measurement on a frequency no longer than once every 15 minutes.
4. Cumulative flow volume shall be recorded daily. The data recording system shall have the capacity to record a minimum of 7 days continuous data.
5. Instrumentation systems shall be interfaced with system control to provide auto shutoff or recirculation in the event that effluent measurements exceed turbidity or pH numeric action levels or numeric effluent limitations.
6. The system shall also assure that upon system upset, power failure, or other catastrophic event, the ATS will default to a recirculation mode or safe shut down.
7. Instrumentation (flow meters, probes, valves, streaming current detectors, controlling computers, etc.) shall be installed and maintained per manufacturer's recommendations, which shall be included in the QA/QC plan.
8. The QA/QC plan shall also specify calibration procedures and frequencies, instrument MDL or sensitivity verification, laboratory duplicate procedures, and other pertinent procedures.
9. The instrumentation system shall include a method for controlling coagulant or flocculant dose, to prevent potential overdosing. Available technologies include flow/turbidity proportional metering, periodic jar testing and metering pump adjustment, and ionic charge measurement controlling the metering pump.

## I. ATS Effluent Discharge

1. ATS effluent shall comply with all provisions and prohibitions in this General Permit, specifically the numeric effluent limitations (NEL).
2. NELs for discharges from an ATS:
  - a. Turbidity of all ATS discharges shall be less than 10 NTU for daily flow-weighted average of all samples and 20 NTU for any single sample.
  - b. Residual Chemical shall be < 10 percent of MATC<sup>9</sup> for the most sensitive species of the chemical used.
3. If an analytical effluent sampling result is outside the range of pH NELs (i.e., is below the lower NEL for pH or exceeds the upper NEL for pH) or exceeds the turbidity NEL (as listed in Table 1), the discharger is in violation of this General Permit and shall electronically certify and submit through SMARTS the results in violation within 24-hours of obtaining the results.
4. The discharger shall comply with any pre-treatment requirements applicable for that system if ATS effluent is authorized to discharge into a sanitary sewer system. The discharger shall include proof of authorization and any specific criteria required by the municipality in the ATS Plan.
5. Compliance Precipitation Event:
  - a. Discharges of stormwater from ATS shall comply with applicable NELs (above) unless the precipitation event causing the discharges is determined after the fact to be equal to or larger than the Compliance Precipitation Event (expressed in inches of rainfall). The Compliance Precipitation Event for ATS discharges is the 10-year, 24-hour storm, as determined using the National Weather Service's Hydrometeorological Design Studies Center Precipitation Frequency Data Server<sup>10</sup> or equivalent.

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<sup>9</sup> The Maximum Allowable Threshold Concentration (MATC) is the allowable concentration of residual, or dissolved, coagulant/flocculant in effluent. The MATC shall be coagulant/flocculant-specific, and based on toxicity testing conducted by an independent, third-party laboratory. The MATC is equal to the geometric mean of the NOEC (No Observed Effect Concentration) and LOEC (Lowest Observed Effect Concentration) Acute and Chronic toxicity results for most sensitive species determined for the specific coagulant. The most sensitive species test shall be used to determine the MATC.

<sup>10</sup> [NOAA's National Weather Service](https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html). Web. <[https://hdsc.nws.noaa.gov/hdsc/pfds/pfds\\_map\\_cont.html](https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html)>. [as of October 19, 2020].

- b. This exemption is dependent on the certification and submission of rain gauge data through SMARTS verifying the precipitation event is equal to or larger than the Compliance Precipitation Event.

#### **J. Operation and Maintenance Manual**

1. Each site operating an ATS shall have a site-specific Operation and Maintenance (O&M) Manual covering the procedures required to install, operate, and maintain the ATS.<sup>11</sup>
2. The O&M Manual shall only be used in conjunction with appropriate site-specific design specifications that describe the system configuration and operating parameters.
3. The O&M Manual shall have operating manuals for specific pumps, generators, control systems, and other equipment.
4. The O&M Manual shall include names and contact information of all personnel responsible for monitoring and maintaining the ATS system.
5. The O&M Manual shall include a failure plan that gives procedural details on when (failure indicators) and how to shut the system down (procedure), and who at the Regional Water Board to contact.

#### **K. Sampling and Reporting Quality Assurance and Quality Control (QA/QC) Plan**

1. A site-specific QA/QC Plan shall be developed for each site. The QA/QC Plan shall include at a minimum shall specify:
  - a. Calibration methods and frequencies for all system and field instruments;
  - b. The methods for determining method detection limits shall be specified for each residual coagulant measurement method. Acceptable minimum method detection limits for each method, specific to individual coagulants; and,
  - c. Specific procedures for monthly laboratory duplicates for residual coagulant analysis.

#### **L. Personnel Training**

1. Operators shall have training specific to using an ATS and liquid coagulants for stormwater discharges in California.

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<sup>11</sup> The manual is typically in a modular format covering generalized procedures for each component that is utilized in a particular system.

2. The training shall be in the form of a formal class with a certificate and requirements for testing and certificate renewal.
3. Training shall include a minimum of 8 hours classroom and 32 hours field training. The course shall cover the following topics:
4. Coagulation Basics –Chemistry and physical processes;
5. ATS Design and Operating Principles;
6. ATS Controls;
  - a. Coagulant Selection – Jar testing, dose determination, etc.;
  - b. Aquatic Safety and Toxicity of Coagulants, proper handling and safety;
  - c. Monitoring, Sampling, and Analysis;
  - d. Reporting and Recordkeeping; and,
  - e. Emergency Response.

#### **M. ATS Monitoring Requirements**

1. The discharger deploying an ATS on their site shall conduct the following Visual Monitoring:
2. The system shall be continuously monitored by either of the following two options:
  - a. A designated responsible person shall be on-site at all times during treatment operations.

OR

  - b. An operator continuously monitoring the ATS off-site. The ATS system must be able to conduct a safe shut down autonomously when the operator connection is lost and/or the system is discharging above levels specified by this Attachment. The ATS shall have redundant monitoring of dosing amounts, influent, and effluent pollutant monitoring. The system shall be able to perform self-diagnostics for safe system shut down when one or more sensors is not performing as desired. All data relevant to system operation shall be collected, monitored, and recorded.
3. Daily on-site visual monitoring of the system for proper performance shall be conducted and recorded in the project data log:
  - a. The log shall include the name and phone number of the person responsible for system operation and monitoring; and



- b. The log shall include documentation of the responsible person's training.
4. Operational and Compliance Monitoring:
    - a. Flow shall be continuously monitored and recorded at not greater than 15-minute intervals for total volume treated and discharged.
    - b. Influent and effluent pH must be continuously monitored and recorded at not greater than 15-minute intervals.
    - c. Influent and effluent turbidity (expressed in NTU) must be continuously monitored and recorded at not greater than 15-minute intervals.
    - d. The type and amount of chemical used for pH adjustment, if any, shall be monitored and recorded.
    - e. Dose rate of chemical used in the ATS system (expressed in mg/L) shall be monitored and reported 15-minutes after startup and every 8 hours of operation.
    - f. Monthly laboratory duplicates for residual coagulant analysis shall be performed and records shall be maintained on-site.
    - g. Effluent shall be monitored and recorded for residual chemical and/or additive levels.
    - h. Refer to the toxicity monitoring requirements below if a residual chemical and/or additive test does not exist and the ATS is operating in a batch treatment mode.
  5. The discharger operating in batch treatment mode shall perform toxicity testing in accordance with the following:
    - a. The discharger shall initiate acute toxicity testing on effluent samples representing effluent from each batch prior to discharge.<sup>12</sup> All bioassays shall be sent to a laboratory certified by the State Water Board Environmental Laboratory Accreditation Program. The required Field of Testing (FOT) for Whole Effluent Toxicity (WET) testing is E113.<sup>13</sup>
    - b. Acute toxicity tests shall be conducted with the following species and protocols. The methods to be used in the acute toxicity testing shall be those outlined for a 96-hour acute test in "Methods for Measuring the Acute Toxicity

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<sup>12</sup> This requirement only requires that the test be initiated prior to discharge.

<sup>13</sup> Information on [ELAP's](https://www.waterboards.ca.gov/drinking_water/certlic/labs/) <[https://www.waterboards.ca.gov/drinking\\_water/certlic/labs/](https://www.waterboards.ca.gov/drinking_water/certlic/labs/)> [ELAP Application and FOT Forms](https://www.waterboards.ca.gov/drinking_water/certlic/labs/fot_forms.html): [https://www.waterboards.ca.gov/drinking\\_water/certlic/labs/fot\\_forms.html](https://www.waterboards.ca.gov/drinking_water/certlic/labs/fot_forms.html). [as of October 19, 2020].

of Effluents and Receiving Water to Freshwater and Marine Organisms, U.S. EPA-821-R-02-012” for Fathead minnow, *Pimephales promelas* or Rainbow trout *Oncorhynchus mykiss* may be used as a substitute for fathead minnow.

- c. All toxicity tests shall meet quality assurance criteria and test acceptability criteria in the most recent versions of the U.S. EPA test method for WET testing<sup>14</sup> as well any toxicity provisions adopted by the State Water Board.
- d. All toxicity tests and analysis shall be consistent with the toxicity provisions of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California.

#### 6. Receiving Water Monitoring

- a. If a Risk Level 3 Discharger utilizing ATS with discharges directly into receiving waters discharges effluent that exceeds the numeric effluent limits (NELs) in this permit, the discharger shall subsequently sample receiving waters for turbidity and pH (if applicable), for the duration of coverage under this General Permit.<sup>15</sup>
- b. Risk Level 3 dischargers shall obtain receiving waters samples in accordance with the Receiving Water sampling location section (Section M.5), below.
- c. Reporting and Recordkeeping
- d. At a minimum, every 30 days a Legally Responsible Person (LRP) representing the discharger shall access SMARTS and electronically certify and submit ATS field data. Records must be kept for three years from the generation or submittal of the record whichever is first.

#### 7. Non-compliance Reporting for ATS Dischargers

- a. The discharger shall report any indications of toxicity or other violations of water quality objectives to the appropriate regulatory agency as required by this General Permit.
- b. The system operator shall immediately report any measurements exceeding water quality standards to a supervisor or other responsible parties, who shall notify the Regional Water Board.

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<sup>14</sup> [U.S. EPA. Whole Effluent Toxicity \(WET\)](https://www.epa.gov/npdes/whole-effluent-toxicity-wet). Web. <https://www.epa.gov/npdes/whole-effluent-toxicity-wet>. [as of October 19, 2020].

<sup>15</sup> Terms including, but not limited to, numeric effluent limitations and exceedances, are defined in Appendix 2 of this General Permit.

- c. The discharger shall electronically certify and submit an NEL Violation Report in SMARTS within 24 hours after the NEL exceedance has been identified for any monitoring data exceeding an applicable NEL in this General Permit.
- d. The discharger shall retain an electronic or paper copy of each NEL Violation Report for a minimum of three years after the date the report is filed.
- e. The discharger shall include in the NEL Violation Report:
  - i. The analytical method(s), method reporting unit(s), and MDL(s) of each analytical parameter (analytical results that are less than the MDL shall be reported as “less than the MDL”);
  - ii. The date, place, time of sampling, visual observation (inspections), and/or measurements, including precipitation;
  - iii. A description of the current on-site BMPs, and the proposed corrective actions taken to manage the NEL exceedance; and,
  - iv. The ATS dischargers shall report the on-site rain gauge reading and nearby governmental rain gauge readings for verification if an applicable NEL has been exceeded during a precipitation event equal to or larger than the Compliance Precipitation Event.